

Accelerating the Army's Acquisition of the Joint Tactical Radio System (JTRS)

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The Joint Tactical Radio System (JTRS) program is a Department of Defense initiative to transform the communications capabilities of the military services by developing and fielding software programmable radio technology. By 2020, the Department of Defense currently plans to refit each service with the JTRS units to facilitate interoperability for joint operations. In its first phase (designated Cluster 1), this system is intended to completely replace and massively upgrade the Army's current radio capabilities.

The JTRS will use a wide-band network waveform (WNW) to provide high-capacity bandwidth or data throughput across its lower tactical internet (defined as the brigade command level and smaller units). Use of the JTRS units will permit the Army to replace its Single-Channel Ground and Airborne Radio System (SINCGARS), Enhanced Position Location Reporting System (ELPRS), Near-Term Data Radio (NTDR) and Blue Force Tracker radio units with higher-capacity, multichannel software-defined radios (SDRs). Current radios produce signals solely through their hardware, and lack the flexibility that the JTRS promises. In addition, the ability to program the units will enable the JTRS units to maintain full functionality with existing radio units, while making future upgrades easier to implement.

Such as system would have proven valuable to the Army's units in the recent Gulf War (Operating Enduring Freedom) by enhancing the voice, data, imagery, and video capabilities for command, control and intelligence communications in joint operations with the other services and American allies. Under current Department of Defense planning, however, the first Army brigade will not deploy with the JTRS until 2010 and the entire Army will not be equipped with these units until 2020.

One option available to the Department of Defense is to acquire and field the JTRS sooner than currently planned in order to satisfy the growing requirements of the Army for increased bandwidth, frequency spectrum, security, and joint interoperability. By requesting \$906 million in Budget Authority from 2005-2009, the Department of Defense could accelerate the production of JTRS radios to equip 10 active Army divisions with units by 2009 (See Table 1 in the Appendix). The current plan for the guard, reserve and support forces would remain the same with the Army fully equipping these units by 2020.

This accelerated option has several advantages for the Army as well as the Department of Defense. Expediting the acquisition of JTRS devices will provide greatly enhanced communication capabilities both within the Army and with other services in joint operations. Additionally, accelerating the deployment of the JTRS will provide a substantial impetus for realizing the goal of transforming the Army's interim force into the Army's planned Future Combat System (FCS). For example, current doctrine for the Future Combat System calls for units as small as the battalion, company, and platoon/squad to field small unmanned aerial vehicles (SUAVs). These units will require the additional data capacity of the JTRS for video data streams and communication. Without the upgraded bandwidth and increased frequency spectrum provided by the JTRS units, the Army will have difficulty communicating with the other services and be unable to transmit UAV downlinks to units below the brigade level. The lack of bandwidth could impede the fielding of the Army's FCS and slow the development of future Army doctrine.

Accelerating the acquisition of the JTRS could also benefit the Department of Defense. Implementation of the JTRS could potentially reduce both Operations and Maintenance (O&M) costs, but it is unclear whether this system will be cheaper to operate and maintain than the various platforms currently in operation. It may also allow monies presently earmarked for communication procurement at the end of the coming decade to be shifted to other transformation Army procurement initiatives (e.g. SUAVs). This analysis, however, only considers costs through 2014. Thus, these potential savings are beyond the scope of this options paper.

This option to expedite the procurement of the JTRS for the Army, however, is not without some tradeoffs and risk. Currently, each JTRS unit is projected to cost \$127,000 versus \$8,000-\$28,000 for the units that it is scheduled to replace. At this price the Army could have used the \$13.5 billion dollars for any number of initiatives including accelerating the research and development for the FCS vehicles or the acquisition of communications technology for the upper tactical internet (i.e. brigade level and higher) such as the Warfighter Information Network-Tactical (WIN-T) and the Multiband Integrated Satellite Terminal (MIST), which will prove critical for allowing commanders access to the information collected in the field.

If the Department of Defense chose to expedite the procurement of the JTRS, it is not clear whether manufacturers will be able to produce units in sufficient numbers to fully equip the interim force by 2009. These monies could potentially be better utilized for other force transformation initiatives. Although it appears likely that it will be easy to upgrade the JTRS units to later versions by reprogramming the software, it is possible that the radios may require additional retrofitted hardware. This risk is mitigated somewhat by the fact that the Army intends to purchase tens of thousands of units. These less-capable early versions could eventually be reassigned to the platoon/squad level where the limitations on the communications capacity and frequency spectrum would have the least impact (note: commanders require greater communication capabilities than their command units). Thus, it may prove less costly in the long run to procure only more advanced versions of the JTRS radios. It should be noted, however, that due to the length of procurement period, the Army has the option to alter its procurement pace if the risks of costs rise substantially or other more promising technologies become available.

Lastly, although accelerating the procurement of the JTRS units substantially increases the communications capability of the lower tactical internet, the Army had other options. It could have continued to rely upon the recently upgraded SINCGARS system and waited for the JTRS radios to become a proven technology before beginning procurement and reducing the risk of having to retrofit the original units. The Department of Defense could have pursued other technologies such as pulse-coded modulated (PCM) lasers, although current research suggests that this is a less promising alternative.

Appendix

**Table 1 – Budget Authority and Outlays for Accelerated Procurement of the Joint Tactical Radio System
(in Millions of Dollars)**

Table1	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
Budget Authority For Proposed JTRS Acquisition (10 Active Divisions)	174.68	177.66	181.00	184.58	188.27	0.00	0.00	0.00	0.00	0.00	906.18
Cumulative Outlays for Accelerated Acquisition per Year in 2005 Dollars	52.40	136.25	160.70	168.04	170.66	122.27	38.43	13.97	6.64	4.02	873.38
Cumulative Outlays for Accelerated Acquisition per Year in "Then Year" Dollars	52.40	138.29	165.89	176.76	183.10	146.43	53.44	23.47	14.01	9.36	963.16